

MICROCORNEA WITH MYOPIA*†

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THE normal corneal horizontal diameter is 12 mm. and any value less than 11 mm. is considered to represent the condition of microcornea (Mann, 1958). The term should be applied only to eyes which are normal except for a small cornea. Corneal curvature is increased so that the corneal refraction is usually great, but associated myopia of varying degrees has been observed by Biró (1935), Puglisi-Duranti (1936), and Hohn Castán (1945).

Biró (1935) reported a youth aged 18 years with high constantly-progressive myopia from early childhood, whose vision could be improved with -28 D sph. to only 5/30. The patient had large, prominent ectatic eye balls and flat microcorneae, measuring 10 mm. horizontally and 10.5 mm. vertically. There was no other abnormality excepting a radial groove of the iris without coloboma.

Hohn Castán (1945) described a patient with myopia of -11 D sph. with myopic fundus changes. The right eye also had a large coloboma of the choroid and optic nerve. The diameter of the right cornea was 8 mm. and that of the left 10 mm. The radius of corneal curvature was 6.9 mm. in the right eye and 7.4 mm. in the left.

We have encountered two cases of microcornea with myopia in brother and sister. Their mother shows a bilateral honeycomb type of central degeneration of the fundus, and the maternal grandfather and maternal aunt are said to be myopic (Fig. 1). The exact measurements for the two patients are given in the Table (overleaf).

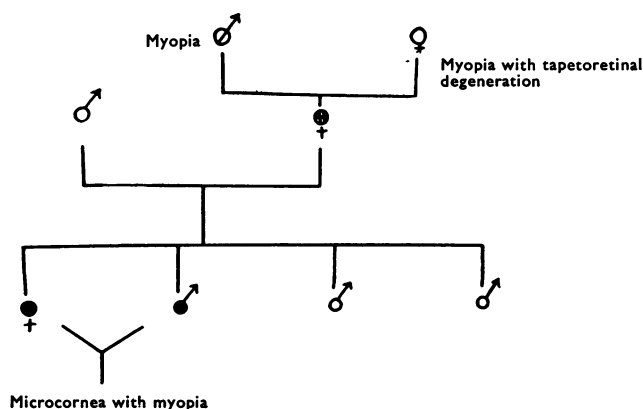


FIG. 1.—Pedigree.

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TABLE
MEASUREMENTS IN TWO CASES OF MICROCORNEA

Case No. 				1		2	
Eye 				Right	Left	Right	Left
Visual Acuity 	Unaided	Distance		2/60	3/60	3/60	6/24
		Near		J6	J2	J4	J2
With glasses				—9 D sph. 6/60	—8 D sph. —1 D cyl. axis 60° 6/9 (pt.)	—6 D sph. —1·5 D cyl. axis 165° 6/18	—1 D sph. —1 D cyl. axis 45° 6/6
Ophthalmometry		Vertical		39·5 D	38·5 D	40·0 D	38·5 D
		Horizontal		39·0 D	37·5 D	39·5 D	39·0 D
Radius of Curvature (mm.)	Vertical			8·4	8·6	8·2	8·4
	Horizontal			8·5	8·8	8·6	8·5
Ocular Tension (mm. Hg Schiötz)				22	22	Not taken	
Corneal Diameter (mm.)	Vertical			8	8	8	8
	Horizontal			8	8	8	8
Orbit (mm.)	Height			36	36	35	35
	Width			38	38	38	38
Orbital Index				94·7	94·7	92	92

Case Reports

Case 1, a Hindu boy aged 9 years, had had progressive visual loss since early childhood. His elder sister (Case 2) showed a similar anomaly but two younger brothers were normal. The father was normal and apparently healthy. The mother had myopia (right eye —0·5 D sph., —0·75 D cyl., axis 90°; left eye —0·5 D sph.) and bilateral central fundus degeneration.

Glasses had been prescribed and changed twice, but for the last 2 years no appreciable improvement could be obtained with glasses in the right eye.

Examination.—Both corneae showed decreased curvature with a normal clearly-placed limbus. The eyes themselves were not unduly small (Fig. 2, opposite). The interpupillary distance was 65 mm., and that across the bridge of nose 14 mm. The right eye showed a divergent squint of 15°, with no restriction of ocular movements. The pupils were circular and somewhat eccentrically placed; they reacted to light, but dilated very poorly with homatropine.

The ocular tensions as judged by palpation were full and equal; the information derived in this way seemed to be more reliable than the tonometric readings (see Table) owing to the non-conformity of the tonometer foot-plate to the corneal surface.

Slit-lamp Examination.—The lens was completely clear. No other abnormalities were seen in the anterior segments: the depths of the anterior chambers were within the normal range.

Fundus Examination.—The fundi were myopic with vitreous floaters; optic discs large with temporal crescents; maculae normal; there was tessellation with areas of chorio-retinal atrophy and patchy choroidal sclerosis with pigmentation.

Case 2, a Hindu girl aged 11 years, first complained of inability to see the black-board. Glasses had been prescribed at the age of 7 years, but were not worn regularly. She now found difficulty in reading as well as for distance. She was a well-developed intelligent child with no bodily defects or malformations.

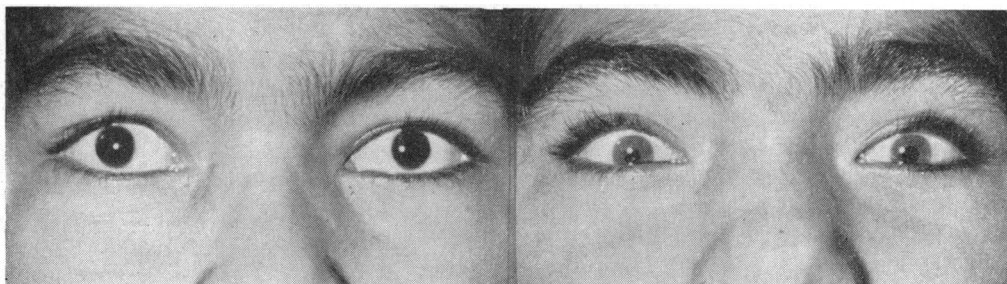


FIG. 2.—Appearance of Case 1.

FIG. 3.—Appearance of Case 2.

Examination.—Both corneae showed decreased curvature with a normal clearly-placed limbus. The eyes themselves were not smaller than normal (Fig. 3). The interpupillary distance was 63 mm. and that across the bridge of the nose 15 mm. The right eye showed a divergent squint of 10° , but no restriction of ocular movements. The pupils were circular, somewhat eccentrically placed, and reacted to light, but dilated very poorly with homatropine. The Schiötz tonometer could not be used because of the non-conformity of the foot-plate to the corneal surface. Digitally, the ocular tensions seemed to be equal and normal on each side.

Slit-lamp Examination.—The lenses were clear in both eyes, and no other abnormalities were seen in the anterior segments. The depths of the anterior chambers were within the normal range.

Fundus Examination.—The fundi were myopic with vitreous floaters, more on the right side; optic discs large with temporal crescents; maculae normal; some areas of patchy choroidal sclerosis with pigmentation.

Discussion

Information concerning microcornea is scanty. The condition is generally thought to be associated with microphthalmos or underdevelopment of the anterior segment, but it may be found in otherwise normal eyes. Glaucoma ensues in approximately 20 per cent. of all cases (Mann, 1958).

An interesting feature of this report is the occurrence of symmetrical bilateral microcornea with myopia in a brother and sister. The mother's retinal degeneration may perhaps be classified as a slight tapetoretinal degeneration (Fig. 4), and the

RIGHT

LEFT

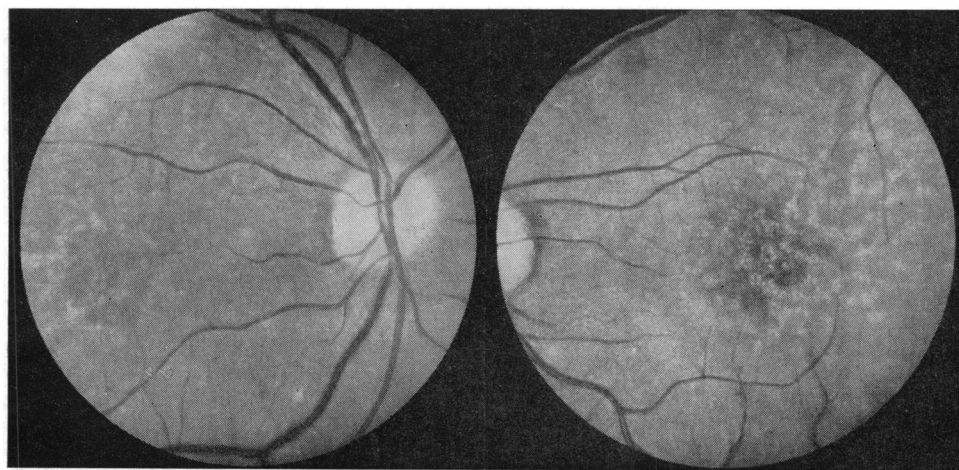


FIG. 4.—Fundus appearances of the children's mother.

myopia in the two children may be a coincident familial condition. Conflicting views have been expressed in the literature regarding the genetics of microcornea. Mann (1958) stated that it is not hereditary. In view of its occurrence in these two children alone in their family, no opinion can be offered in these two cases.

Summary

Two cases of true microcornea with degenerative myopia in a brother and sister are reported. No other abnormalities of the anterior segment were seen.

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